

IN THE SPECIFICATION

Please amend the specification as follows:

Replace the paragraph spanning pages 2-3, between page 2, line 28, and page 3, line 5 of the specification with the following:

According to an exemplary embodiment of the present invention ~~as set forth in claim 1~~, the above object may be solved by a method of reconstructing coherent-scatter computed tomography (CSCT) data of an object of interest wherein attenuation data of the object of interest is acquired from primary radiation transmitted through the object of interest. Then, a compensation of scatter radiation data is performed on the basis of the acquired attenuation data. The scatter radiation data is based on scatter radiation scattered from the object of interest. The coherent-scatter computed tomography data is then reconstructed by using the compensated scatter radiation data. According to an aspect of this exemplary embodiment of the present invention, a beam-hardening compensation of the scatter radiation data is performed.

Replace the paragraph on page 3, between lines 21-25 of the specification with the following:

According to another exemplary embodiment of the present invention ~~as set forth in claim 2~~, a compensation of a beam-hardening effect is performed on the basis of an energy shift determined on the basis of an equivalent object. The energy shift caused by the beam-hardening effect of this equivalent object is known and may be used for compensation. This may allow for an improved image quality.

Replace the paragraph on page 3, between lines 26-31 of the specification with the following:

According to another exemplary embodiment of the present invention ~~as set forth in claim 3~~, a mean attenuation caused by the object of interest is determined on the basis of the attenuation data. Then, an equivalent thickness of a pre-selected material such as water and/or any other proper material, e.g. PMMA, is determined on the basis of the mean attenuation. On the basis of the equivalent thickness an energy shift is determined which is then used for compensating the scatter radiation data.

Replace the paragraph on page 4, between lines 8-14 of the specification with the following:

According to another exemplary embodiment of the present invention ~~as set forth in claim 4~~, a reconstruction of a volume data set comprising absorption coefficients of the object of interest is performed. Then, radiation spectra are determined for scattered photons of the scatter radiation. Mean energies of the scattered photons are determined on the basis of the radiation spectra and then a reconstruction of the coherent-scatter computed tomography data is performed by using these mean energies.

Replace the paragraph on page 4, between lines 20-26 of the specification with the following:

According to another exemplary embodiment of the present invention ~~as set forth in claim 5~~, on the basis of the attenuation data, a material is determined located on a path of a scattered photon of the scatter radiation. This is done on the basis of the CT reconstruction. Then, for performing a correction or compensation of the scatter radiation data, these materials are

taken into account and beam-hardening effects and/or absorption effects may be compensated for in the scatter radiation data. A CSCT reconstruction is then performed on the basis of the corrected scatter radiation data.

Replace the paragraph spanning pages 4-5, between page 4, line 27, and page 5, line 4 of the specification with the following:

According to another exemplary embodiment of the present invention ~~as set forth in claim 6~~, a coherent-scatter computed tomography apparatus is provided where a beam-hardening compensation of scatter radiation data is performed.

Advantageously, this coherent-scatter computed tomography apparatus may be part of a cone-beam CT system. Due to the described reconstruction according to the present invention which may allow for an improved image quality, this apparatus may advantageously be used in medical imaging for material analysis and, for example, for baggage inspection. Advantageously, for these applications a good resolution of the scatter function which may be achieved with the apparatus according to the present invention is important.

Delete the paragraph on page 5, between lines 5-6 of the specification.

Replace the paragraph on page 5, between lines 7-10 of the specification with the following:

According to another exemplary embodiment of the present invention ~~as set forth in claim 9~~, a data processing device is provided comprising a memory and a data processor. The data processing device according to this exemplary embodiment is adapted to perform the method of the present invention.

Replace the paragraph on page 5, between lines 11-20 of the specification with the following:

According to another exemplary embodiment of the present invention ~~as set forth in claim 10~~, a software program for reconstructing coherent-scatter computed tomography data of an object of interest is provided wherein, when the computer software is executed on one of the data processor and a coherent-scatter computed tomography apparatus, an operation in accordance with the method of the present invention is performed. The computer program

according to the present invention may be stored on a computer readable medium, such as a CD-ROM. The computer program may also be presented over a network such as the WorldWideWeb and may be downloaded into the working memory of a data processor from such a network. The computer program may be written in any suitable programming language, such as C++.

Replace the paragraph on page 9, between lines 21-28 of the specification with the following:

Furthermore, the calculation unit 18 is adapted for the detection of explosives in the item of baggage 7 on the basis of the readouts of the lines 30 and 34 and 15 ~~and 32~~. This can be made automatically by reconstructing scatter functions from the readouts of these detector lines and comparing them to tables including characteristic measurement values of explosives determined during preceding measurements. In case the calculation unit 18 determines that the measurement values read out from the detector 8 match with characteristic measurement values of an explosive, the calculation unit 18 automatically outputs an alarm via a loudspeaker 21.

Replace the paragraph on page 11, between lines 7-19 of the specification with the following:

Fig. 5 shows a side view of the detector geometry of the computer tomograph of Fig. 1. Fig. 5 can also be contemplated as showing a side view of Fig. 4, where, however, instead only the provision of one line 30 and one line 15, in Fig. 5 there is provided a plurality of detector lines ~~32~~ between the line 30 and the line 15. The detector element  $D_i$  is arranged with a fixed distance  $a$  from the slice plane of the primary fan-beam. According to an aspect of the present invention, for each detector element  $D_i$  of the column  $t$  and for each projection  $\Phi$  (see Fig. 3) a spectrum  $I(E, t, \Phi)$  is measured. Performing this measurement for a plurality of projections  $\Phi$  along a circular or helical scan path, a three-dimensional data set is acquired. Each object pixel is described by three coordinates  $(x, y, q)$ . Thus, according to an aspect of the present invention, for reconstructing an image or for reconstructing further information from the three-dimensional data set, a  $3D \rightarrow 3D$  reconstruction method is applied such as the one described in DE 10252662.1, which is hereby incorporated by reference.

Replace the paragraph spanning pages 12-13, between page 12, line 28, and page 13, line 1 of the specification with the following:

As may be taken from Fig. 7, for the following description, a CSCT scanner with, for example, a polychromatic x-ray source 49 and a detector ~~49-48~~ is considered. The detector comprises or consists of energy resolving detector elements, which may be similar to the ones described with reference to Fig. 1. The emitted x-rays have been collimated, such that a fan-beam radiates the object of interest located in an area around the center of radiation 47.

Replace the paragraph on page 20, between lines 15-25 of the specification with the following:

Fig. 13 shows an exemplary embodiment of a data processing device for performing the methods of the present invention, for example, the methods described with reference to Figs. 10 and 11. As may be taken from Fig. 9, a central processing unit (CPU) or image ~~processor 1~~ processor 51 is connected to a ~~memory 2~~ memory 52 for storing read outs from the detectors or the finally

reconstructed data. As indicated before, the data may be acquired by a CSCT scanner as depicted in Figs. 1 and 6. The data processor ~~1~~ processor 51 may furthermore be connected to a plurality of input/output-network or other diagnosis devices. The image ~~processor 1~~ processor 51 is furthermore connected to a ~~display 4~~ display 54 (for example to a computer monitor) for displaying information or images computed or adapted in the image ~~processor 1~~ processor 51. An operator may interact with the data processor ~~1~~ processor 51 via a ~~keyboard 5~~ keyboard 55 and/or other input or output devices which are not depicted in Fig. 1.